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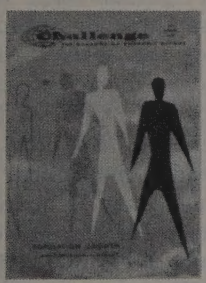

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a personal note

from the editor

The gold standard, and the end of Neanderthal Man

FROM A STUDY of the facts available today, Neanderthal Man evidently became extinct because he didn't know the Fourth Glacial Age would get colder before it got warmer. If this seems to be a singular lack of intelligence on the part of Neanderthal, what do you suppose our descendants or replacements will be saying about our economic foibles 50,000 years from now?

If ever modern Homo sapiens reaches the brink of economic extinction, among his last fleeting thoughts would be this one: "If only we hadn't gone off the gold standard!" Such is the popular and persistent belief that money is worthless unless is "backed" by gold. What I take exception to is not that people want money to retain its value, but rather the manner in which they think this can be done.

The economic history of gold requires lengthy discussion. But, for our purposes, we can say that when money came into general use to facilitate the exchange of goods, money as such became a secondary representative of the value of the goods. Primary representation was in gold, and therefore the value of the money itself was determined by the gold "behind" it. Why the value of goods and services had to be first stipulated in gold and then restipulated in money is easy to explain. Money could be easily multiplied—especially through the excessive use of the printing press by legal agencies. But gold, a metal in relatively short supply, could not be so readily multiplied.

Thus, when there is a gold standard, the supply of money in circulation is tied to the supply of gold held in the treasury of the money-issuing agency. This practice prevents governments from increasing the money supply at will—which always leads to inflation when there is no basis for such increase in terms of the existing goods and services. Where a gold standard does not exist, historically the experience has been that money comes to be valued at whatever the government says it is worth. This practice invariably leads to a devaluation of the currency, much to the detriment of people who work

to make money and save it for the security of their future.

In actual practice, however, the function and necessity of gold as a stabilizing factor in a monetary system is not so positively determined. When in 1849 gold was discovered in California, there was a sudden increase in our supply of gold. Our money supply expanded because of the new money issued against the new gold pouring into the banks. Yet this money had no relationship to what the country was producing in goods and services. Consequently, there was inflation. It took more money to buy things than it did before gold became more plentiful. Then, during the Civil War, the Government resorted to printing money to pay for the cost of the conflict. These "greenbacks" were not backed by gold; but what is even more important, they were not backed by anything else either. There was again inflation. Thus, in the first instance because there was too much gold, and in the second because there was no gold, the immediate effect was the same—a period of rising prices. But there was one thing common to both instances: the money supply was expanded more rapidly than the production of goods and services.

So we can see that *with* gold or *without* gold, a monetary system is stable and reliable only to the extent that it is consistent with what the economy can produce. Better to think of the problem in these terms than to place a blind reliance upon a misleading mechanism such as the gold standard. Some time ago there was a report that the Russians had developed a technique enabling them to convert lead into gold (through the use of atomic energy, of course). This report was a hoax. But if the world should suddenly be flooded with Russian gold, would this mean that everybody will be richer? Or would the Russians be richer than anyone else?

What we are after is sound currency. If people could be certain that their governments will maintain a direct relationship between the supply of money and the supply of goods and services, then the economic value of gold would be only that which it intrinsically enjoys as a metal.

Since people always get the kind of government they deserve, it is significant that human beings should place more faith in a material thing like gold than in their ability to control their governments. Is this a faint admission that Homo sapiens is an inadequate being and that his ultimate fate will be the same as Neanderthal's, who didn't know enough to come in out of the cold?—H. B.

Challenge Notes

Kinds of consumer credit; pilferage in industry; unused inventions

SEVERAL well-known economists and bankers have, in the last few months, voiced concern over the rapid expansion of consumer credit. They note that such credit has grown at a much faster rate than our disposable income. In 1948, outstanding consumer credit amounted to 7 per cent of our disposable income; by the end of 1955 the ratio had risen to 12.2 per cent. Obviously, many of us were adding to our debt faster than we were adding to our income.

Is this situation dangerous to the economy? This is the sort of question that just cannot be answered with an unequivocal "yes" or "no." There is no general law which tells us what proportion of our income we can "safely" sink into credit payments. That will clearly depend on such factors as other fixed obligations, the prevailing cost of food, shelter and clothing, and, perhaps most important, our expectation of future earnings.

On the other hand, we are sometimes subjected to pressures which encourage us to make credit purchases we cannot really afford. Those advertisements which urge us to buy TV sets or other major appliances for only "pennies a day"—with never a word about the number of days we would have to pay, or the selling price—are one such pressure. Merchants who compete with each other in extending credit terms rather than in reducing prices or improving service are another such pressure. Indeed, some distributors are so concerned about increasing their credit sales that it sometimes appears as though the economy might *depend* on credit expansion.

Up to a point, economic growth does depend, among other things, on credit expansion. If a lot of us didn't buy automobiles or TV sets on credit, there would be that many fewer automobiles or TV sets sold. But it must be the right kind of credit—credit which we can afford. And artificial pressures to make credit terms

appear less burdensome than they really are do not help us to avoid the "wrong" kind of credit.

Pilferage in Industry

CAN A company require its employees to take periodic lie detector tests? That is the question the National Labor Relations Board will soon have to answer in connection with a union action which seeks to prevent a well-known manufacturer from requiring some of its employees to submit to periodic lie detector tests. The manufacturer claims that such action is necessary in order to cut down on pilfering in the plant. The union, while admitting that pilfering is widespread, maintains that the company's method of dealing with it violates "employees' civil and personal rights."

We think that the union has a point. It is accepted American legal practice that you are innocent until proven guilty and that the burden of proof rests with the accuser, not the accused. For a firm to require its employees to take periodic lie detector tests is equivalent to accusing them of a crime of which they have to "clear" themselves. It puts the burden of proof on the accused, not the accuser. Besides, we think that such a procedure is bad labor relations, for it implies that the company feels that all its employees are potential crooks. While we sympathize with the company's pilfering problem, we hope it will find other ways of handling it.

Unused Inventions

WE HAVE always been fascinated by the thought of inventions which could be transforming our lives right now were it not for economic factors which make it commercially unprofitable to produce them. Take Televisionfone, a telephone system developed by Bell Laboratories which would enable us to see on a television screen the person we are calling. Bell claims that it could set up such a system "within a matter of weeks" if people were willing to pay "dozens of dollars for a three-minute call." As it is, the company doesn't plan to introduce a production model of TV telephone for another fifteen or twenty years.

Now, we're not at all sure that we should like to see everyone we speak to on the telephone. Still, we often wonder how many other inventions there are lying around unused because costs are too high or the market isn't ready for them. Can (or should) anything be done to speed up the transition from invention to innovation? We wonder.—M. K.

What's in a Price?

by Alfred Gross

Should there be a standard price on an item everywhere, or varying prices depending on the type of service a retailer renders?

SHOULD retail stores pursue a one-price policy? Is there something very righteous about having a set price for each item for every customer? The rapid growth of discount houses in the last few years has brought this question to the fore.

The one-price concept has not always been important. Most students agree that John Wanamaker instituted this policy about a half-century ago and made it a byword in the retailing field.

The basis for the development of such a policy and the substance of its success are worthy of examination. Prior to the institution of this concept, retailers were secretive about their prices; they would charge for each item whatever the traffic would bear. A customer could never be sure he had received the best price no matter how much he haggled. Under such conditions it took courage and vision to advertise prices, since competing merchants might easily undercut them. As John Wanamaker told his customers, he would not have dared to state his prices publicly, if he had not been certain that they were the lowest that could possibly be charged by an honest merchant for the quality of goods and services he offered. In an era in which flexible pricing within a store was accepted as standard practice, the concept of a set price for each item for all customers was revolutionary, and it proved to be a striking success.

The one-price system, however, should not be confused with list-price advertising by manufacturers—a practice which attempts to establish the top prices at which recognized products may be purchased from all merchants who have such goods in stock. Neither Wanamaker nor the other retail-

ing giants who competed with him ever held that *all* merchants should quote the identical price for the same item. What Wanamaker said was that in his store a customer could be sure of having the same price quoted to him as was quoted to his other customers, and that the price would be the most reasonable that he could offer. This meant that haggling no longer was necessary within his store in order to buy at reasonable prices.

The establishment of a one-price system is, however, complicated by the fact that inherent in every sale there are two factors. The customer not only buys a specific piece of merchandise; he also buys a variety of services offered to help him select goods properly and to increase his satisfaction with them.

This is clearly seen in the analysis of any purchase. A shopper may buy the same item from any one of a number of stores. These stores may be attractive or ugly; carry wide or narrow ranges of merchandise; be staffed with minimum sales personnel as in a supermarket, or with enough salespeople to assist every customer who enters.

These differences are only the beginning. Customers' service needs vary enormously. For example, would you buy a television set, carry it to your car, take it home and install it yourself? A few people would. Do you want a careful fitting of a suit? Do you wish to buy a suite of furniture for cash or on the installment plan? These questions indicate only a handful of the varied services which different customers desire and which different retailers offer. The range of such services—in a recent survey more than fifty different ones were analyzed—is seldom thought about, but many customers would miss them greatly if they were not available.

The retailer who sets a price must, therefore, take into consideration the cost of services which he feels it necessary to offer his customers. Consequently, it would be logical to expect lower prices in minimum-service stores, such as those in which you help yourself, and higher prices in full-service stores. Generally, prices quoted by retailers are commensurate with the services they offer to customers.

Confusion reigns when retailers attempt to straddle the needs and demands of different consumer groups. Interesting examples are provided by the department stores. These retailers generally are geared to offer a comprehen-

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sive range of services. As such they must normally quote substantially higher prices than their minimum-service competitors, and for the customer who desires a wide range of service, the higher prices should be quite acceptable.

THE trouble begins, however, when a regular department store customer wishes to buy there, but at the lower prices quoted in minimum-service outlets. Very often such a customer is willing to forego many department store services, if she could buy at lower prices. In these circumstances, the department store finds itself in a quandary. It does not wish to lose such sales, especially when it knows that competing retailers will get them. But at the same time the department store is advisedly fearful of establishing a dual price policy—that is, a higher price for full service sales and a lower price for minimum service transactions.

The crux of the problem stems from the full-service store's desire to make sales that would normally go to minimum-service retailers. In theory, the full-service store should stick to its last and maintain prices commensurate with its service, while leaving to the minimum-service operator those customers who are satisfied with his kind of operation. But the full-service store is afraid to do so lest it lose other customers as well. The alternative, then, is for it to compete head-on with the minimum-service operator. This usually results in heavy but often profitless volume for the full-service store which is not geared to that type of operation.

Perhaps much of the hand wringing and shock that has accompanied recent price cutting is a result of too many years of easy selling. During the war years, merchandise shortages hardly made it necessary for the typical retailer to extend himself. Today, tremendous quantities of goods flow to the market place. Outlets must be found for these vast supplies if industry is not to suffer from inventory indigestion.

These goods naturally find their way into the hands of large-scale distributors who obtain heavy sales volume most easily by cutting prices. The result is a sharp intensification of competition among retailers.

Minimum-service retailers who offer substantially lower prices to their customers have grown rapidly. As a result, many former full-service retailers have changed their policies in order to compete more effectively. Their prices are not as low as those in the former group, but they are substantially below those available from the large number of full-service retailers who have maintained

their old mode of operation and prices. As competition in retailing has become more intense, prices have become more sensitive to changes in costs of both merchandise and service.

THE development of discount houses and their place today in the retailing structure is not as novel as some are inclined to think. In fact, they can be traced back at least thirty years. What has made their position so important at the present time is the rapid growth of brand names, made possible through heavy advertising.

Historically, new types of merchants appear on the business scene whenever the established retailing fraternity becomes unduly complacent or charges prices which others think are too high. The mail-order house, in its heyday, was considered a predatory price cutter. Many department stores still have reputations for using loss leaders to establish competitive positions. Chain stores have been legislated against because of their price-cutting practices. And now we have discount houses which are looked upon with disparaging eyes by full-service retailers.

Yet, in a very real sense, the evolutionary development of newer types of retailers acts as a beneficial policing force on the market place. It effectively stops established retailers from increasing their prices beyond a competitively determined limit. It also gives consumers opportunities to purchase goods from the kinds of stores best suited to their changing needs.

What we are witnessing today is a sharpening of retailing practices, corresponding to the sharpening processes going on in other fields, since price-lowering commensurate with decreasing service actually increases retailing efficiency. Just as production methods, which a generation or two ago were crude by today's standards, have changed, so retailing methods have changed. We have come a long way from the general store at the turn of the century to the hard-hitting, scientifically managed stores of today. Their lower markups do not mean lower profits as many traditional retailers still believe. Volume selling coupled with tighter service policies makes lower price selling practicable and profitable. Such a trend is bound to grow and should be looked upon as salutary for the entire economy. ■

THE RAILROADS of the U. S. S. R., Japan and India carry the heaviest passenger traffic in the world.

Management and Tomorrow's Economy

The future executive will be less concerned with profits as such and more concerned with preserving his firm as an institution

AMERICA 1975 SERIES

by Arthur S. Barron

IF THE statisticians are right, the average big-business executive of 1975 will be fifty-three years old when he becomes head of the company; a native American; the son of a small businessman or administrator; a stanch Republican; a college graduate with professional training in law, engineering or business administration; and he will have served with his company for approximately sixteen years.

The bases for these predictions are the career-lines of top executives from the turn of the century to the present. These have been exhaustively studied by business historians and provide a relatively valid profile of the future executive. Unfortunately, no such data exists for the prediction of what kind of job this future executive will fill. Though we know quite well *who* the new executive is likely to be, we know little about *what* he is likely to be doing.

The best we can do in sizing up the executive job twenty years from now is to isolate the basic trends in our present-day economy and then speculate on their implications for business management in the future. Two such trends of crucial relevance to the future development of the executive job are the automation of industry and the increased institutionalization of the business enterprise.

That automation (roughly "the use of machines to run machines") will be in widespread operation in the economy by 1975 is no longer open to question. Recent Congressional hearings, labor's demand for the guaranteed annual wage, the number of new automation journals and magazines, the fantastic increase in the produc-

tion and sales of self-regulating equipment and computers all testify to this fact. Increasingly, therefore, the executive will be required to undergo (and support) graduate training in the techniques and philosophy of management, to acquire a number of highly specialized skills, to understand fully and to use precise, systematic and scientific tools (of which the much-heralded Operations Research is but one example). Already the proportion of top executives with college educations has increased from 19 per cent in 1900 to 45 per cent in 1950; the proportion with graduate training has increased from 8 per cent to 21 per cent in the same period. Automation should greatly strengthen this trend.

The new professional skills will be needed mostly in the area of decision-making and planning. It is here that for several reasons executive "intuition" and "savvy" will have to give way to more scientific techniques.

First, automation greatly increases what has been termed the "futurity" of management decisions. Not so long ago, most important business decisions were made for two or three years ahead. Under automation, few major management decisions will be made for lesser periods than ten to fifteen years ahead. The long-range capitalization demands of automation, its greater inflexibility in production scheduling, its requirement of continuous operation, and its need for even more far-sighted market forecasts virtually insure this change in the time-orientation of decision-making. Such a development demands truly professional knowledge and skills.

Second, automation vastly increases the need for coordinated planning in the enterprise. The new technology requires an absolute integration of the various functional areas of the enterprise —sales, production, finance and so forth. Management will desperately need the capacity to view the business "as a whole" and to be able to spell out precisely the consequences of a decision in one area of the operation for each of the other areas. This will be possible, however, only through the use of scientific data-collecting, processing and communication techniques.

Third, automation demands greater stability of operation. It requires "steady flow" in the productive and marketing process. Nowhere is this requirement of stability more evident today than in the area of labor costs. In the past, fluctuations in production were accommodated with revisions

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in the work force. Labor was "hired" when production rose and "laid off" when production dropped. Labor costs were, in short, variable. Today, the picture is changed. Under GAW, for example, some labor costs have become fixed. Clearly, then, the financial soundness of an enterprise may depend, in large part, on management's ability to insure stability of operation. The social and technological innovations which are necessary to meet this demand for stability depend on the professional competence of management. In every aspect of decision-making, for that matter, automation places heavy responsibility on the executive.

Of EQUAL significance with automation for the evolution of the executive job is the increasing institutionalization of business in our economy. What is meant by this sociological tongue-twister is, first, the growing public nature of the business corporation and, second, the growing size, impersonality and complexity of the corporation. The former aspect refers to the external relation of the business organization; the latter aspect relates to its internal organization.

Without question, the business firm is becoming less of a private enterprise and more of a public institution. Its ownership, certainly, has increasingly become more public than private. The growing number of stockholders throughout the nation and the continuing separation of ownership from management are evidences of this trend. There is, besides, the increased interference of government in the running of business enterprises. Business decisions on a number of significant issues are more frequently being made under conditions established by that most public of all institutions—the state. Then, there is the increased role of labor in business decision-making. Even such a matter as plant relocation has become an issue in which labor demands equal participation with management. The opinion pollsters, for their part, point to an increased public interest in business conduct. Each of these factors contributes greatly to the public nature of the business firm. We may expect to see this trend strengthened in the future.

The consequences of this development for the executive job are extremely significant. At the least, management will devote a far greater share of its time to noneconomic functions. Chief among these will be public relations activities—speeches, community projects, publicity campaigns and so forth. It is no mere accident that the public-

relations budget of the 100 leading U.S. companies in 1954 amounted to 50 million dollars and that the annual total payroll of all the men and women in public relations is approximately 400 million dollars. These statistics are an indication of management's increased concern with plant-community relations as distinct from internal plant relations.

We may also expect greater management participation in government on the policy-making and high administration levels. In the next twenty years, it is likely that companies will regularly provide "sabbaticals" so that top personnel will be able to put in their stint at Washington.

THE need to develop a new philosophy of management which will spell out the social and moral responsibilities of business to society is yet another consequence of the growing public nature of the corporation. The frequent appearance of this topic at management conventions, in the journals and even in the popular magazines reflects the growing need for an articulate management ideology.

Finally, the new position of the business enterprise in society will demand considerable sharpening and broadening of management skills in the human relations area. Management will be increasingly judged not only for its economic efficiency, but also for the degree of self-fulfillment and dignity which it gives to those whom it directs. Management will need a more precise and richer insight into human behavior and will need to learn the most effective methods for motivating it.

The growing size, impersonality and complexity of the corporation is the other major aspect of the institutionalization of business. Evidence of this trend is to be found in such factors as the growing frequency of large-scale business mergers, the appearance of multiproduct enterprises, the tendency toward greater functional specialization of command within the enterprise and the very pronounced trend toward the "inbreeding" of top-level management. In connection with this latter point, it is interesting to note that the ratio of presidents of the large corporations who have served from twenty-one to thirty years with the company before taking command has increased from 9 per cent in 1900 to 48 per cent in 1950.

THESE trends in the internal organization of the business firm will have an enormous impact on the psychology of the future executive. Heretofore, the chief motive force behind the executive's devotion to hard work

(whatever else happens, the 62-to-110-hour executive work week will not change), has been primarily economic. The executive has been largely moved by a desire to maximize profits and to produce goods. While this goal will not lose importance, the executive of the future will probably be more interested in the stability and perpetuation of the firm than in its expansion. His loyalty will be to the firm as an institution rather than as a maker of products or of profits.

Decision-making in itself will become a cooperative group effort. This may well have the effect of reducing the executive's drive to be an innovator and increase his desire to "swim with the tide." Caution, rather than innovation, may well prove to be the prevailing attitude. This tendency will be heightened, of course, as rising to the top of the organization becomes more a process of formalized promotions and less a matter of creative initiative. The executive's willingness to take risks may also diminish. A bureaucratic concern with the public reputation of the enterprise, the reactions of staff equals in the organization and the dominant concern for stability and solvency may lower significantly the executive willingness to "take chances." Concern for social approval and excessive identification with the enterprise as a whole may even lead to the acceptance of unprofitability in certain areas of the organization.

If a conclusion may be drawn from our discussion on how these two basic trends in our economy—automation and institutionalization—will affect the executive job of the future, it is that management faces a profound challenge to meet the new technical requirements of its profession and, perhaps more crucial, to define and assume its larger social responsibilities *without* losing its creative vitality in the solely economic realm. The success with which management recognizes and meets this challenge will largely determine the ultimate dimensions of the executive job. ■

Women Three-to-One

DURING THE PAST sixty-five years, women have taken over from the men the operation of the business offices in the country. In 1890, men outnumbered women by eight to one in clerical jobs. Today, women outnumber men by three to one. Only in government offices do the men still dominate.

Labor and Tomorrow's Economy

The future worker will be closer to the over-all operations of his company, but more dependent on his union

AMERICA 1975 SERIES

by Henry J. Meyer

TWENTY YEARS is not a very long time for fundamental social changes to occur, but within such a span significant trends long in the making do become clearly visible. Certainly, the composition and characteristics of our labor force may be substantially changed in the next two decades. What will emerge as the portrait of the American worker by 1975? What kind of work will he be doing? What will be his relationship to management and to unions? What will be his place in American society?

We can guess at some answers by examining and projecting certain socio-economic trends of the past two decades. Of course, if the continuity of current trends is destroyed by the cataclysm of nuclear war, shattering economic depression or political upheaval, all bets are off. But most analysts see in the next twenty years not war but nuclear stalemate; not depression but more gentle economic swells and reasonably stable politics. On these assumptions, we can speculate about some of the main trend-lines which will shape the picture of the American worker by 1975.

There will be many more people working. By 1975, the total labor force will probably grow from the 65 million it reached in 1955 to approximately 90 million, while our population will approach 230 million persons. As a percentage of total population, however, the labor force will decline in the next two decades. This will reflect the low birth rate of the Thirties, the increasing proportion of persons living longer, later entries into and earlier exits from the labor force.

More people will work in "terti-

ary" industries. There has been a long-term trend away from the primary industries concerned with extracting and producing food and raw materials. In 1955, less than 10 per cent of the labor force worked on farms, and this proportion may drop to 7 or 8 per cent by 1975. More recently, the occupational shift has been away from secondary industries, which convert raw materials into finished products, and into tertiary industries such as repair services, trade, administrative jobs, entertainment and other leisure-time services.

There will be more white-collar and technically skilled workers. The boom in white-collar, semi-professional and professional occupations is likely to continue. Approximately 29 per cent of the labor force falls into these categories. The proportion of unskilled workers—only 6 per cent of the labor force in 1955—will be still smaller by 1975, while the number of skilled workers—mechanics and repairmen, construction machinery operators, maintenance men for automatic equipment—which has been increasing rapidly since 1940, will probably be even more significant by 1975. Indeed, with the development of complex automatic machinery for production, inspection and communication, we may, by 1975, need a new name to describe the skilled worker who knows how to control dials, tapes, signals, speed and timing devices.

Workers will have more education. The occupational shift from "hand" work to "brain" work and personal contact with customers is encouraging the trend toward more education. Greater technical knowledge and more training in personnel relations will be required of the worker in 1975. Today, roughly one-third of our high-school graduates attend college. By 1975, many educators predict that more than 50 per cent will be attending college.

FOR the general population there will undoubtedly be an increasing fund of basic knowledge. Reading and writing skills, rudimentary knowledge of motors, power tools, machines, electronic devices and the capacity to handle oneself adequately when dealing with others may well become the universally assumed basic store of knowledge upon which more specialized skills will be built.

Many women will be workers and wives. More than two-fifths of the 1955 labor force was composed of women; by 1975 women may constitute nearly half of all workers. In 1955, there were almost 12 million working wives—

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approximately 30 per cent of all married women—and many of them were mothers of school-age children.

Employees will work in large organizations. In 1950, more than one-third of the workers covered by social security were employed by firms employing 1,000 or more people. By 1975, such large business organizations may embrace a majority of all wage earners.

Workers will have more economic security and higher living standards. If the assumption of relative business stability holds, we may anticipate that economic security will be almost universal. The certainty of an income and of protection against the consequences of illness, temporary unemployment and old age will probably characterize the lives of most workers.

MOST economists anticipate further increases in the level of real wages, together with greater equalization of incomes. Already more than half the families in the United States own their homes. What has been called the "middle-class package"—the automobile, television set, refrigerator, washing machine, etc.—is already possessed by a substantial part of the population. The credit and installment buying which make this possible may be even more extensive in 1975. Indeed, this debt may well become the characteristic type of economic insecurity.

There will be more union members, and unions will become more important in the over-all economy. Today, approximately one-third of all nonagricultural workers are members of labor unions, and unionization is likely to become increasingly important by 1975. During the past twenty years, when the labor movement was split between the AFL and the CIO, total membership almost tripled and union influence grew swiftly. We may not witness an equivalent growth of membership in the twenty years following the unification of the labor movement in 1955; but by 1975 there will certainly be more union members. And workers will look increasingly to union leadership to cushion the adjustments which automation, atomic energy and shifts in occupational demand will require.

Union leadership itself, if present signs are correctly read, will devote less attention to measures for worker security—which already will have been substantially achieved—and more to transitional retraining, to income distribution, and through education and broader community services, to bettering the total life of the worker and his family.

A shorter work week and longer vacations will be common. The

trend has long been toward a shorter *scheduled* work week. This trend will continue. Overtime is often worked today where it is available because the premium pay is needed to support a higher standard of living. In 1975, if the economy is operating at a high level, some workers may still work overtime at their primary jobs. Those who will be content just to work fewer total hours, however, may become more and more typical as workers move to suburban homes. There, they will have a chance to develop new outside interests.

WITHIN the framework established by these trends we may sense some of the new demands which will be placed on the worker of 1975. He will have to start from a higher educational level and continue to advance in order to keep up with the technical requirements of his job. With the progress of automation, he will have to understand his place in the work organization in more comprehensive terms. Thus, he will tend, more and more, to evaluate his own welfare in terms of the company and, indeed, the entire economy. In all likelihood, he will express his responsibility more and more through his union because the decisions which affect him most will be made on a higher and more inclusive level. Similarly, he will have to give greater consideration to government policies which affect his industry. Thus, his perspective will have to broaden.

Some observers have suggested that the worker is already taking a "professional" attitude toward work. This means that he views himself as independent or self-directed, rather than as an employee who merely does what he is told. Although automation may increasingly limit the range of his own manual work by making the machine do more and more of the actual producing, it may multiply the responsibility which the worker must bear for the productive process itself. By the same token, since a white-collar, technical or service worker will be making more of his own decisions, his execution of the job will be more crucial. He will have to learn to work with more general instructions and to visualize his work more inclusively than he does today when he is primarily required to follow instructions.

The problems of job transition will still concern the workers of 1975. Some will be facing displacement because of new machines and the demand for new technical skills for which they are not trained. The necessary transitions may be facilitated by in-service training programs which industry will develop as well

as by an enlarged adult education program.

How will the worker of 1975 fit into American society? As to the worker's style of life and basic values, they will be those of the rest of American society. The American worker has never been class-conscious. In 1975 he will be more certain than ever that he belongs to a broadly inclusive "middle-class." As he achieves higher earnings, more schooling, suburban residence and greater leisure, he will come to expect full participation in the economic, social and political life of the nation.

To achieve this participation, the American worker will use the institutions which have grown out of his chief functional roles in modern life: that of employee and of citizen. Through his union and his vote he will be more insistent on sharing in the major decisions which affect his work, family and community. As a special kind of employee-owner, often owning stock in the company he works for, he will have an additional interest in corporate policy. From his union leadership he will expect greater responsibility for anticipating changes and protecting him from their consequences. Consequently, he will have to resolve complex and sometimes conflicting personal, economic and political issues. Therefore, his politics will tend to be "independent," and to vote "as a worker" will not mean voting as part of a monolithic bloc.

Clearly, then, he will be motivated in both work and politics by a larger view than that of his job and wages. He will be more likely to make decisions about his job and the expenditure of his earnings in the light of an over-all life picture, including the interests and desires of his family. And, as his response to management comes to depend more on his identification of the goals of the business as his own, he will reject paternalism and demand partnership.

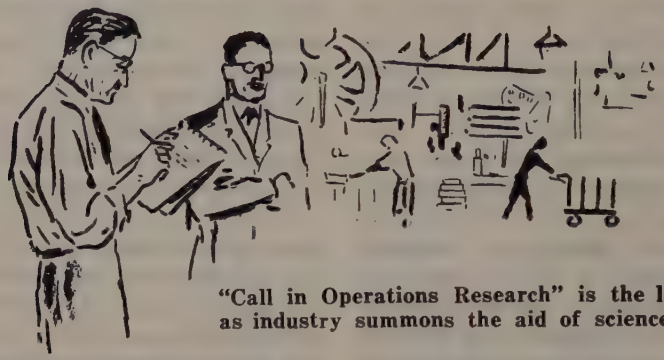
A specialist, a technician, a bureaucrat; an integral part of a technology of interdependent and unbelievable machines; secure in his standard of living and confident of his collective power and his political strength, the American worker of 1975 will feel—and he will be—more independent than ever before. ■

Overhauling the Haulers

Regular overhauling of a locomotive is considered necessary after every 60,000 miles; of a truck, after every 20,000 miles; and of aircraft, after every 30,000 miles.

Industry's 'O. R.' Men

by Richard S. Halpern



"Call in Operations Research" is the latest cry as industry summons the aid of science

ONE OF the most pressing problems confronting the United States today is how to make more effective use of our industrial and technological resources. With many industries operating at full capacity, the attention of management and industrial engineering is being focused increasingly on achieving maximum efficiency from existing units of manpower and machinery. This holds true in spite of the spread of automation and other technological innovations designed to minimize the amount of labor required for any given operation. Many of us have become so enthusiastic in our acceptance of automatic and self-regulating machinery that we have forgotten that for the solution of most industrial problems, the special equipment required is either not available or it is too expensive; or that for many problems it is simply not the answer at all.

Consider, for instance, the plight of the foundry executive who had to decide whether or not to invest in certain expensive equipment or cancel a valuable contract. His company had orders for steel bars of a specified length. Because of the inherent inaccuracy of the existing machinery, no two bars ever came out the same size. Long bars had to be trimmed and short bars relegated to the scrap heap. With existing machinery, it looked as if the company could only lose money. Since the company's financial position was poor, the only logical alternative seemed to be to cancel the contract. Or was it? Unwilling to accept as final his own analysis of the situation, the

executive called in a team of experts from a relatively new field called *Operations Research.*

After a detailed mathematical study of the production process, the O.R. analysts found that the major losses stemmed not from the occasional production of short bars, but from the regular production of long ones which proved extremely costly because of the accumulation of waste trimmings. By a change in the manufacturing process which slightly increased the chances for the production of short bars, the analysts found that a *great* reduction in the amounts trimmed from long bars could be achieved. A favorable ratio was thus obtained between the infrequent and, in this case, insignificant losses from the production of short bars and the regular but significant losses from the trimming of long bars. As a result, the contract was fulfilled profitably without purchasing any new equipment.

Since its inception during World War II, Operations Research has been used successfully for the solution of such diverse problems as the effects of promotional efforts on sales, the reliability of airborne radar, the most efficient method for strip mining phosphate rock, and so on.

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The new methodology was developed in response to the demands generated by the increasing complexity of military and business operations. In order to minimize the uncertainties inherent in any sort of decision-making process, Operations Research has helped to supply executives with a body of conceptual and analytical tools which facilitate the establishment of realistic, alternative solutions under various conditions. In this way, the risks involved in any course of action can be judged more rationally than with the old technique of trial and error which, considering the high cost of individual operations nowadays, can easily become trial and disaster.

Of course, businessmen have long attempted to make difficult, involved decisions by supplying themselves with literally tons of economic and statistical data. Until quite recently, the good executive has been able to combine this data with his own observations to form an over-all picture of an entire operation which enables him to make a wise decision. In large measure, Operations Research is a logical development of this process. It accomplishes in an organized, systematized fashion what was previously done in an intuitive, piecemeal or commonsense way. Viewed in this perspective, we can look upon Opera-

tions Research not as a radical innovation using a novel, unproven technology, but rather as the organized end-product of well-known thought processes which serves to make explicit what was formerly only implicit.

FUNDAMENTAL to any Operations Research analysis is the formation of a mental image of the situation in question. All of us do this in everyday life whenever we try to analyze any problem. We select certain aspects which we think are most significant for an understanding of the situation, and we calculate and speculate as to their possible interrelationships. Past experience with similar situations aids greatly in helping to weed out relationships which do not seem particularly useful or true.

We realize, for example, that five men can build a house faster than one, and ten faster than five. But when the number is increased to fifty, the speed and efficiency of house-building may not increase proportionately, if at all, since fifty men can get in each other's way. What, then, would be the number required for greatest efficiency? From the crude model in our mind's eye we cannot provide an accurate answer, but at least the problem has been defined. The determining factors in the situation have been outlined.

A more functional model could be constructed by measuring the different variables in the situation: the number of bricks to be placed, walls to be erected, electrical connections to be made, etc. In this way, very precise quantitative information can be obtained —such as the number of men required to do the job within various time limits—and decisions reached more readily. By carefully delineating the types of relationships which inhere in any situation or operation, the model systematically reveals to observation, controlled experiment and ultimately to manipulation, many hidden but nevertheless crucial attributes of an operation or production process.

Besides obtaining valuable quantitative data, one of the many other advantages in constructing mathematical models of operations is the increased opportunity for seeing analogies between the situation under investigation and other problems dealt with successfully in the past. A model is, after all, not reality itself but only a representation of it—an analogy. Many seemingly unrelated problems have similar formal, logical attributes which make them amenable to the same generalized solution.

Is Operations Research scientific? If we mean by *scientific* the postulation and subsequent testing of hypotheses, then the answer is

"yes." But if we include completely dispassionate objectivity about every phase of the problem under investigation, then the answer becomes complicated. For Operations Research is conducted in a *social* context of men and values, as well as in a context of *material* objects. Clearly, then, the scope of investigation may be sharply limited by the values, previous commitments and vested interests of management and others concerned. This is not too important since an Operations Research team is not involved in pure research to produce merely theoretical results. Its function is to advance data and recommendations concerning those parts of an operation over which the client has control.

BUT useful as it is, Operations Research is neither a panacea nor a substitute for intelligent executive ability. The formation of a model does not eliminate the need for an executive's judgment; it only makes possible better judgment by demonstrating alternative courses of action and their possible consequences. The decision to choose between alternatives must always be dictated by the executive's values and commitments, and the executive himself must still formulate the overall goals of any operation.

There is a fundamental distinction between setting goals and finding the most efficient means for reaching them. To confuse the two is not to recognize the profound moral implications inherent in any philosophy dedicated to efficiency. Efficiency in and of itself is not always a virtue, as those who have escaped from the tyranny of totalitarian regimes can testify. The strength of a free democratic society depends as much on how goals are reached as on what the goals are. It would seem that, on the basis of these considerations, Operations Research will find application only where the goal first has been agreed upon. ■

Most-talkative Nations

WITH AN AVERAGE of one telephone for every three persons, the United States, as of January 1, 1955, had more than half of the world's 94.5 million telephones.

Iceland has replaced the United States as the second talkingest nation in the world. Canada, with 417 conversations per capita, is in first place for the third consecutive year. Iceland, with 394 conversations per capita, out-talked the U. S., which had 393.

When Is the Nation's Debt Too High?

by Sidney Weintraub

The debt's economic consequences need not be severe, if national income can keep pace with the annual interest charges

IT IS NOT uncommon to see a cartoon depicting John Q. Taxpayer holding on his shoulders the heavy burden of the national debt, currently just under 280 billion dollars. Yet, almost perversely, when we turn to the financial pages and note the reports of such financial institutions as banks, insurance companies and investment trusts, or when we talk to friends and relatives, it is not uncommon to observe them boasting of their financial solvency and wisdom in owning government bonds.

Here we have the makings of a paradox. In viewing the national economy we are prone to fear debt, public as well as private. In evaluating the financial status of individuals and institutions, on the other hand, we are inclined to point up the size of monetary assets—which are, ultimately, debts since they are claims upon others —as pillars of financial strength. In truth, there is no real dilemma: a capitalistic economy is one in which borrowing and, inevitably, lending take place. One without the other is no more possible than an engine without a motor.

From this it does not follow that there are no problems connected with the existence of debt or its size, particularly the national debt.

In large part, the national debt, like so many other facts of life, some pleasant, some unsavory, is a problem inherited from the past. It hardly helps to rake over what is now history in order to assess blame or praise for its current magnitude. Considering that all but about 25 billion dollars of the debt total was created in periods of war, or in periods of heavy military outlay as in the present, there is no individual culprit. Almost regardless of which political party is in power, given a period of

critical military necessity, the debt total will increase. This, at least, has been the history of our own country and of every other country with a comparable economic system.

To reduce the national debt total, if this is our aim, will require a future annual excess of government receipts over expenditures. Should the expenditure total remain relatively constant, and the size of the national income continue as at present, this must mean an increase in tax rates. Otherwise, any real debt reduction would be precluded. With expenditures constant, and economic conditions roughly the same, any important tax reduction would mean not a contracting, but a *growing* national debt.

Generally, if little can be done to reduce government expenditures, few economists are likely to recommend tax cuts unless the economy is somewhat depressed, or if an imminent downturn is expected. Tax increases, at best, are recommended for periods of strong inflationary pressure. (Contrary to some strange views, economists do not "enjoy" high taxes any more than their business friends.) On this basis, therefore, prospects of debt reduction are generally confined to periods of high national income and employment.

To some individuals these simple facts and their implications are unpalatable. They arouse impatience and annoyance, as if anger can banish the problem. Whole political campaigns have been conducted on the promise, for example, of reducing government expenditures *and* taxes, with the former falling more than the latter. But on any realistic appraisal of the federal budget, these promises are quickly seen to be illusory. For example, with national security expenditures absorbing some 41 billion dollars (and, in the present world climate, not subject to any real reduction); with interest on the national debt taking 6.4 billion dollars; and with social security outlays absorbing another 1.7 billion dollars, with veterans' services amounting to 4.4 billion dollars, there is a relatively fixed annual outlay of 53.5 billion dollars in prospect before a single dollar is spent on "ordinary" government functions. The total of all federal outlays for the fiscal year 1955 amounted to 64.5 billion dollars. Thus, the area for possible savings is comparatively small.

Therefore, the best we can hope for is a modest and gradual reduction of the national debt, *if* expenditures can be contained at

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their present levels or slightly lowered, and *if* tax revenues continue to roll in at approximately their present annual rate of some 64 billion dollars. Assuming that military demands are not compelled to go higher, it appears to be the present administration's aim to seek a modest beginning aimed at reducing the national debt by approximately half a billion dollars a year. Of course, a shooting war would throw all of these calculations into discard.

The national debt, now approximately 280 billion dollars, is therefore likely to be with us for some time to come. Consequently, we should consider the problems connected with its existence. So massive a debt total just cannot be ignored.

In the first place, our federal Treasury borrows through many forms: it issues Treasury bills, which mature in ninety days; it sells bonds, which have maturities running for as long as twenty, thirty or forty years. Some of these obligations expire almost every week. During the next year some 62 billion dollars of debt will have to be paid off.

In general, as a bill, note or bond issue matures, the Treasury issues a new loan instrument to replace it. Over the past few years the attempt has been made, with partial success, to refund some of the outstanding debt with obligations of longer maturities. Yet, in view of the size of the outstanding total and the greater cost of borrowing on bonds as against short-term Treasury bills, progress has inevitably been slow.

One might wonder whether a situation may arise in which the Treasury will be unable to sell new bonds to pay off and redeem an expiring issue. A fair reply to that is that if sums cannot be borrowed at 2.5 per cent interest, they can be borrowed at 2.75 per cent, or 3 per cent. Thus, the question is not one of whether lenders can be found, but of the terms at which the latter are willing to lend. As long as people are willing to accept currency, which is a noninterest-bearing promissory note of the federal Treasury, they will be willing to accept bonds, which represent an interest-bearing option. One is no more "safe" than the other.

Thus, the vital problem concerns the cost of borrowing and, inevitably, the interest payments on the national debt. In the postwar years this had led to some really difficult questions. In its borrowing function, the Treasury has been vitally concerned with keeping interest rates low. On the other hand, in their role of a balance wheel striving to stabilize the economy, the authorities of

the Federal Reserve System have desired at times to tighten credit and, thereby, to raise interest rates. This has created some thorny issues in debt management—namely, how to reconcile the borrowing and refunding needs of the Treasury with the requirements of monetary control in the interest of economic stability. The present weight of opinion is that economic stability is the overriding objective and that the Treasury must accommodate its borrowing needs to this broader criterion, even though it means an increase in annual interest charges on the national debt.

BUT what of the burden of the national debt? Some economists might contend that the existence of an inherited debt constitutes no real burden. For insofar as our heirs (or we ourselves) inherit a national debt, the self-same progeny also inherit government bonds. Those of us who are the fortunate heirs of an estate containing $50,000 in government bonds do not describe ourselves as poor; instead, we are likely to congratulate ourselves on being quite well off. Likewise, over the whole economy, if the government debt is 280 billion dollars, individual bondholdings, directly or indirectly, will be of precisely the same size. This is a fact of arithmetic.

More sophisticated questioners will allege that the real debt burden develops out of the fact that the national debt requires annual interest payments of some 6.4 billion dollars.

To this, the same sort of reply is often made—namely, that when such interest payments are made, some fortunate bondholders receive these sums as a reward for having loaned their money. Thus, for every burden there is also an equivalent benefit.

Unfortunately, the difficulty with this argument is that those receiving interest are not wholly identical with those paying taxes. To some extent, of course, taxpayer and bondholder are the same. In many cases, however, they are not. And to this extent, those paying taxes and not receiving interest can be said to be carrying an interest burden due to the accumulated past debt.

YET, there is no simple solution. Yelping at the past, railing at individuals or disapproving of the previous cycle of history does not help. What we can do, insofar as we are cognizant of the issues and clear on the alternatives, is to try to influence the direction of the future. The major choice we have to make is between (1) high enough tax rates and low enough expenditures to allow debt reduction, or (2) tax rates

high enough to cover current government expenditures but too low to provide adequate margin for debt reduction. These are, admittedly, difficult alternatives.

There is one main avenue of escape. And this is through a growth in our per capita productivity and per capita income. Thus, if the interest on the national debt runs to 7 billion dollars, and the personal income is 300 billion dollars (our 1955 rate), the average tax rate required to make interest payments amounts to 2.3 per cent. If income rises to 350 billion dollars and interest payments hold fast, the average tax rate will fall to 2 per cent. With income at 400 billion dollars (achieved through higher productivity and reasonably constant prices), the average tax rate per dollar of income to meet interest payments would be reduced to 1.7 per cent.

Thus, in a very significant and telling way, the problem of the national debt is a problem of the size of income. If interest payments remain about the same, with national debt reasonably constant and interest rates about as they are, a growing national income can mitigate the debt burden. The greatest danger then, and the potential source of an increasing debt burden, would be a fall in the income level through depression, compounded by an enlargement of the national debt. Like so many of our national problems, the debt problem is alleviated by prosperity and complicated by depression.

Since the present debt burden is only about 2 per cent, with national income at 320 billion dollars and interest payments at 6.4 billion dollars, we may realize how unwarranted are those occasional hoary and ill-informed stories of a possible inability of the federal Treasury to meet its interest obligations. Considering that federal revenues at nearly 64 billion dollars are just ten times the debt interest charges of 6.4 billion dollars, it is preposterous to speak of an inability to meet payments. Most of us would regard ourselves as under little stress with an income of $640 a month and fixed charges of $64, or about 10 per cent of the total. This is approximately the situation at the national level. Further, through greater taxes Treasury income can always be enlarged, if need be. Clearly, however, present tax levels are quite ample to sustain the annual interest charges. ■

Population Growth

by Harold S. Sloan

Does it peril underdeveloped areas?

JUST what is being accomplished by the millions of dollars and the thousands of workers engaged in Point Four, the United Nations Technical Assistance Program, the Colombo Plan, and other activities designed to help the people of underdeveloped countries? Is the diffusion of technological knowledge helping the mass of people, or are its benefits being dissipated by growing numbers which perpetuate a subsistence existence?

In India, for example, some three and a half-million acres of barren soil have been converted into arable land; but each year there are nearly five million more mouths to feed. In Egypt, a vast reclamation, resettlement and village development project is in progress; but each year at least a half-million more people must be cared for in an already crowded country. Mexico, while recording creditable industrial progress for the decade up to 1947, increased its rate of population growth from 1.7 to 2.8 per cent each year during that same period and now reports that a dwindling food supply is in prospect.

Anticipating this seemingly paradoxical relationship between technological advancement and population growth, the American biologist Raymond Pearl (1879-1940) withdrew to his laboratory at Johns Hopkins University to seek some answers. If a laboratory seems a strange place to observe population growth, it should be explained that the study started with fruit flies. A cozy little home for a few Mr. and Mrs. Drosophila Melanogasters was arranged in a milk bottle, and a constant supply of food was delivered at regular intervals. Since the

life cycle of a fruit fly is only ten or eleven days, a sizable population could be expected within forty-five to fifty days. Dr. Pearl prepared to observe just how his artificial universe would become populated with living things.

The experiment started with twenty-two adult flies. On the ninth day there were thirty-nine; on the twelfth, 105; on the twenty-first day the count was 390. Finally, on the 38th day the count rose to 938.

If these figures are plotted on a graph, the resulting curve will be recognized as a logistic or logarithmic curve. Starting almost parallel to the base of the chart, this type of curve rises slowly at first; then more rapidly until a midpoint is reached; then, continuing upward, it tapers off at the same rate that it originally advanced, ending almost parallel to the upper limits of the chart.

Having transferred his attention to statistics, Dr. Pearl made graphs of the population growth figures of various countries and found that in each case the resulting curve fitted nicely into some section of a complete logistic curve.

THE Swedes were probably the first to establish the custom of systematically counting their numbers at regular intervals, beginning as far back as 1750. Interestingly, their early population curve fits the lower section of the logistic curve, reflecting, as will be explained later, the stimulus of the industrial revolution on a new cycle of population growth. Today, it extends up to the section where the curve begins to taper off.

The United States was not far behind, having begun its census counts in 1790. Its population curve is similar to Sweden's, except that the middle section is steeper, due, no doubt, to the successive waves of immigration that occurred during the last half of the nineteenth and early part of the twentieth centuries. The French population curve, beginning in 1801, extends farther along the upper section of the logistic curve than either of the others, depicting a close-to-stationary population. Put all of these curves—and others—together, as was done by a distinguished English statistician, and the result approximates a complete logistic curve which also represents the growth of the Drosophila family.

Of course, this does not mean that there is a scientific "law" of population growth applicable to all living things—fruit flies as well

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as to human beings. If this were so, future census statistics could be predicted with unfailing accuracy, since, given one section of the logistic, the rest of the curve can be measured with mathematical certainty. While some of Dr. Pearl's predictions have proved amazingly accurate, it would be rash indeed to impute precise mathematical parallels to situations influenced by drastically differing physical, social and economic conditions. However, the logistic curve does disclose the fact that population growth occurs in four well-defined stages.

First there is the stage in which population grows very slowly, representing the start of the logistic curve. Second, there comes a stage in which there is an upsurge of population growth, corresponding to the middle part of the curve. Third, we have a gradual turning point when population is still increasing, but at a slower rate. This is seen in the upper middle part of the logistic. Finally, as in the first stage, a very slow growth again characterizes the end of the curve.

These stages of development suggest an explanation of how the earth's population has grown to 2.5 billion people. During Man's 500,000-year sojourn on earth, population growth has occurred in cycles. According to this theory, each cycle has been characterized by a logistic curve. As each cycle ended, epoch-making discoveries or inventions stimulated new growth cycles. The transitions from root grubbing to hunting, from hunting to a pastoral economy, and then to agriculture have probably been responsible for new cycles of population growth. The greatest transition of all, that from agriculture to industry, certainly has had that effect. Following these historic upsurges, population has leveled off again, as indicated by the characteristic upper plateau of the logistic curve.

THIS explanation of world population growth is given considerable backing by a study of German population statistics. Before the Franco-Prussian War of 1870-71, the German economy was predominantly agricultural. Population growth was beginning to taper off—that is, it was approaching the end of a cycle of growth. Then, during the next two decades, spectacular progress was made in technological development. Thus, within a comparatively few years the transition from an agricultural to an industrial civilization was accomplished. Census figures for the period after 1880 reflect this change. They show a new cycle of growth which can be traced back to the slowing-down period of the former cycle. Thus, in at least one instance, observed

facts support the theory.

But why should any particular cycle of population growth take the peculiar form of a logistic curve? For lower forms of life, and, indeed, for human beings during most of history, the answer is implied in the fruit fly experiment. While birth rates remain close to the biological maximum during the entire cycle, death rates vary. With a bountiful food supply, the death rate is relatively low and, as in stage two, the population mounts rapidly. With ever-increasing numbers, however, the food supply is no longer adequate, and the death rate increases (stage three) because only the more fortunate individuals survive. Finally, with no increase in the food supply, the death rate catches up with the birth rate (stage four), and the population does little more than sustain itself on a subsistence level.

THERE are still a few areas today which have not yet been touched by modern technology. These lands are at the peak end of one of the growth cycles, with birth rates approximately at the biological maximum and death rates trailing not far behind. Their standard of living is not much above the subsistence level. Favorable conditions may cause some increase in population for a time, but unfavorable conditions inevitably follow and cut down any numbers in excess of the maximum supportable by the economy.

For industrially developed nations, however, the explanation of population growth differs somewhat. Turning points in the logistic curve appear to be influenced only indirectly by the food supply. Instead, technological development is the determining factor. Most of the underdeveloped countries now beginning to adopt modern technological methods are in the second stage of population growth. They are experiencing a great upsurge in numbers, not primarily because of an increase in food supply, but because modern medical and sanitary practices are reducing death rates, while birth rates remain high. India falls within this category, as do many Latin American nations.

Countries further along in the process of technological development—like Japan, Australia and many Eastern European nations—are, for the most part, in the third stage of population growth. Their numbers are increasing, but not as rapidly as before because of decreasing birth rates.

Finally, there are the highly developed countries already in the fourth stage of very slow population growth, or rapidly approaching it. Here, instead of death rates

climbing up to meet high birth rates, birth rates are leveling off to meet low death rates. And instead of a subsistence level of living, the mass of people enjoys the major comforts and many of the luxuries of life. Such is the case in much of Europe as well as in the United States.

Although there is no scientific "law" to prove that countries now underdeveloped will follow the population pattern of the highly developed countries, the evidence at hand does point strongly in that direction.

It would seem, then, that their population problem is not a hopeless one, since increasing numbers do not threaten indefinitely to absorb the benefits of increased productivity engendered by technological progress. Instead, as indicated by the logistic curve, the problem presents itself as a temporary hump to overcome, the hump being the upsurge in population following the first impact of technological civilization. As technological development is applied more intensively, the hump should disappear.

This conclusion is supported by a group of United Nations experts. After studying measures for the economic development of underdeveloped countries, they reported:

"The belief that economic development must inevitably be dissipated in population growth causes pessimism in some quarters. We do not share this view. If vigorous effort is put into developing the underdeveloped countries, we see no reason why their national income should not rise at rates higher than the rates at which their populations are currently increasing or may be expected to increase. The problem is difficult, but is not insoluble." ■

After Sixty-five

Nearly three-fourths of Americans over 65 have either no income or an income under $1,000 a year, according to a recent study. Some 46 per cent have no income; while 38 per cent have a yearly income under $1,000. Eleven per cent have an income between $1,000 and $2,000, and 15 per cent have $2,000 or more.

The main source of income for 33 per cent of those over 65 is social security or other retirement benefits. Thirty per cent are employed, or are the wives of wage earners; 20 per cent receive public assistance. Of the remaining 17 per cent, 5 per cent are in homes or hospitals; and 12 per cent derive their income from personal savings, insurance, investments, relatives or veterans' benefits.

Henry T. Heald

Chancellor, New York University

Our Education Needs Will Be Met

Q DR. HEALD, *in recent years the plight of higher education in the United States has become the subject of much discussion. What major problem faces colleges and universities today?*

A The essential problem is one of finding the means to maintain and improve the quality of our educational services. In the years immediately ahead, the enrollment in colleges and universities is going to increase very rapidly. In fact, it will probably double in the next fifteen years. Now, very few people think this is an undesirable trend. But the pressures of a constantly increasing enrollment have naturally heightened the need to make more money available to the American educational system. The bill for salaries and for new construction will continue to rise steadily.

Q *Why have these developments thrown our higher educational system into a condition described as a "plight"?*

A You might say that education in general has been one of the forlorn sectors of our constantly expanding economy. Education has not fully shared in the vast improvement in the standard of living since the war. Consequently, administrative and teaching personnel of our educational institutions are somewhat handicapped compared to a good many other wokers in the economy. There has been an increase in the cost of everything that an institution has to buy, and perhaps the relative decrease in the amount of money that could be readily obtained from gift sources has aggravated the problem.

Q *A business organization which anticipates a market of so many millions more in the next ten years will take steps to enlarge its plant, its personnel, and so on. Why has it been difficult for our educational institutions to put themselves on a similar footing of preparedness?*

A Well, there is a very fundamental difference between the financial structure of a business corporation and an institution of higher learning. A university, unlike a business, does not operate on a profit-making basis. We are providing an education for our students without asking them to pay the full cost of the services they are enjoying. This holds true for both publicly and privately supported institutions. In the case of a tax-supported college or university, money from the public treasury will eventually have to be provided to meet the increasing costs. In the privately supported institutions, which take care of roughly half of the higher education needs of the United States, a part of such costs is borne by tuition fees, another part by the income from endowments, and some by current gifts and other miscellaneous income for services in which the institution engages. But the constant problem that our private institutions must face is how to balance the budget on a year to year basis. There is no possibility in this kind of a financial structure of setting aside any sum for depreciation which can later be put into new plant. Profits cannot be set aside to amortize a new class. The more business we have, so to speak, the more money it costs us. Now, that does not mean that we are not interested in meeting additional obligations. But you can see that a university cannot operate as a private business does.

Q *What is the basis for the idea or philosophy that it is all right to provide an education to an individual at less than full cost?*

A That feeling is deeply ingrained in the American concept of education. We think it is worth while to educate talented young people because of the values which they can bring to their communities and to their nation. It would be a very unfortunate thing if only those people who could afford to meet the full cost of a college education were to receive such an education. We would then be selecting our students on the same basis as we select the people who can afford to wear the most expensive clothing and drive the highest priced automobiles. That is not a proper basis for selecting our potential leadership.

Q *Exactly what is it that our educational institutions will have to do to be of adequate service in the future?*

A We are facing a twofold problem. Our institutions must improve physical facilities, which these days is a very expensive proposition. And, of course, they will have to increase the number of their faculty members. But even if the money were available for the brick and mortar part of the job, the numbers of adequately prepared and trained faculty aren't going to be there at the time they are needed. We may have to find the means to utilize faculty members more effectively and to develop pedagogic techniques that have not been tried heretofore.

Q *But before anything else, it is evident that you must first get the money. Where is the money to come from?*

A Certainly, public institutions will eventually get the needed sums from taxes. Our private colleges and universities will continue to have a more difficult time. They must get the necessary funds from private donors—from alumni, other individuals, foundations and, to an increasing degree, from the American corporate system. Tuitions have already been increased substantially, and the thinking among most institutions is that any further increases at this time will deny substantial numbers the opportunity to get a college education.

Very few corporations make contributions for endowment purposes

Q *Has the competition from state-supported institutions aggravated the financial position of the private schools?*

A The American educational system needs the services of both the public and private institutions. They are not in competition with each other in the ordinary sense. The student who goes to a private university does not represent a lost sale to the public institution, and vice versa. The educational task to be performed for the country is so great and so important that it is essential that both public *and* private institutions be well supported. No thoughtful student of this subject would like to see education entirely supported by the state, and certainly we need to maintain a reasonable balance. They will both be the better for maintaining such a balance. The problem of higher education today is not one of who gets the

students, but who is able to provide the quality, the variety and the kind of education that a student should have.

Q *What has been the experience of private universities in obtaining gifts from corporations? Have such gifts been on a "crash," emergency basis to offset a current deficit?*

A They are not on a "crash," emergency basis. No one is very much interested in bailing out a semibankrupt institution. The interests of corporations are in maintaining and improving the status of education in general, in making it possible for an institution to do a better job. Very few corporations ever make contributions for endowment purposes. They do contribute, on a regular basis, what is in effect income from endowment. More and more corporations are developing rather systematic plans for making such appropriations to education on one basis or another, depending on the particular interests of the corporation involved. This is a perfectly desirable development.

Q *To what extent will the widely distributed gift from the Ford Foundation help our institutions of higher learning?*

A Last December the Ford Foundation announced the projected distribution of some 260 millions of dollars among privately supported colleges and universities. This represents a very broad plan of helping essentially all of the accredited four-year, privately supported institutions of America. The major portion of this money is for endowment purposes, the income of which is to be used to increase faculty salaries. It was a very generous act on the part of the Ford Foundation. But to give you an idea of what the size of our financial problem is, if all the income from the Ford Foundation grant were to be spread evenly among the faculty members of the participating institutions, the average increase in salaries would come to only 4 or 5 per cent.

Q *The five million dollars New York University is to receive represents the largest single portion of the total grant. Is that correct?*

A Yes. We received the top sum because New York University is the largest privately supported university in the country. In addition, New York University was included among a relatively smaller number of institutions which received a so-called accomplishment grant. In other words, the Ford Foundation gave some money to all private in-

stitutions and then singled out 126 of them which it felt had made some important progress in recent years in improving the status of their faculties. To these institutions the Foundation gave an additional grant, and the five million dollars we received represents the total of both kinds of grants.

Q *How will New York University use the five million dollars?*

A As far as the basic grant is concerned, it must be handled as an endowment for a period of at least ten years. The income is to be used to increase faculty salaries. The accomplishment grant may be used for salary purposes or for other pressing educational needs. I should point out that the Ford Foundation, in making these grants, hoped that other donors would do everything possible to provide additional sums—in effect, to match the grants rather than to discourage other donors.

Q *What will the five-million-dollar grant contribute to the annual financial needs of New York University?*

A The grant is an important gesture in the right direction, but the problem remains very great. To be specific, the annual budget of New York University is approximately thirty-five million dollars a year. If we take five million dollars and invest it at 4 per cent, we will have an annual income of 200,000 dollars a year, or a little more than one-half of one per cent of our annual operating budget.

There is more private money available in America today than ever

Q *Where else might donations come from?*

A Well, they might come from individuals. There are still a few people around who have very large fortunes. In fact, there is more private money available today in America than there has ever been, particularly in the $25,000-a-year-and-up income category. People in that group are not going to provide endowments, but they can provide substantial and continuing annual support for the institutions in which they individually are interested.

Q *What can be done to step up the pace of private contributions?*

A First, we have to get across to the public an understanding of the importance of education and the importance of our universities to

a democracy and to a sound economy. Also, we have to develop the American idea that those who have attained success should share their means with others through the mechanisms of our voluntary agencies, of which the universities are the most solid and enduring.

Q *Do you think that a united fund drive appeal would be useful?*

A The large givers to educational institutions are always those people who are interested in specific institutions. They get a great deal more satisfaction out of giving to a specific institution than they would out of simply saying "here's a million dollars to throw in the pot for colleges everywhere." I think there is some danger in a completely impersonal approach to giving. I see nothing wrong in giving where you know what is going to be accomplished by the gift and where you can take some personal interest in the program of the institution.

Q *Will the challenge of raising sufficient funds be met?*

A I feel that it will be. Unquestionably, America is going to provide the educational facilities to meet the needs of increased enrollments. The fact that an ever-increasing number of American youths is going to college is certainly not a catastrophe. It is a splendid thing for the country. Trustees, alumni and friends of education may have to work hard to find the necessary resources for our institutions, but there are encouraging signs. Gifts to education have increased, and I believe they can continue to increase. If you take this institution as an example, more money was given to New York University during the four years ending last June than during the previous twenty years.

Q *Then you feel the country can supply the extra means to maintain the standard of services of our private colleges and universities?*

A There is no question at all about it. The problem is, how? It's simple to think of having everything done in terms of a nice totalitarian plan without going to the trouble of persuading individuals to support their universities. But I don't think that is the American way. We shall have difficulties, but in the long run we shall maintain a much stronger educational system.

Q *Thank you, Dr. Heald.* ■

you may want to know...

IF YOU get dividends from Canadian stock holdings, remember that Canada witholds 15% in taxes. You can take this withholding tax either as a deduction or as a credit on your U. S. return, depending upon which gives you the best tax break.

Tax-free Interest

ALSO remember that certain U. S. government bonds pay partially exempt interest. For example, if you own many U. S. 2¾% debenture, *Series D* bonds, from which you receive $500 interest, you include this amount as part of your income. But when you have finished computing your total tax, you may subtract 3% of $500, or $15.

Back to School

IF YOUR children are grown up and you would like to go back to business, you might find the refresher business course at the Greenwich House in New York just what you are looking for. Designed for women over 40, the free 8-week course covers typing, bookkeeping and shorthand.

Undoing Mildew

SHOES kept in a warm, damp, dark place are almost sure to mildew. If that happens, just wash off the mildew with a mild soap and warm water. Mildew rarely does serious harm to leather unless it is allowed to remain too long, but it may change the color.

Attention Inventors

IF YOU invented any useful gadget that might be turned into cash, think about patenting it. First step is to write to the Commissioner of Patents, U. S. Patent Office, Washington, D. C. for a list of attorneys registered to practice before the U. S. Patent Office. Choose an attorney, tell him your

idea, and if he finds the device original and patentable, he will handle most of the details. It takes about 3 years and $300 for the average patent to go through.

Knotty Problem

BEFORE you paint knotty pine, be sure to seal the knots with a coat of shellac or aluminum paint. Otherwise the sap and other resins may come through the paint.

More on Taxes

IF YOU are associated with an unincorporated business which has elected to be taxed as a corporation in 1955, remember that March 1 is the deadline for filing statements with the Internal Revenue Service. March 15 is the day for tax-exempt organizations with a business income to file 1955 returns and pay the first half of the tax due.

Protocol Pamphlet

IF YOU'VE ever been caught with your protocol down, you might find informative a new pocket-size book called *Basic Principles of Parliamentary Law and Protocol.* It features a meeting agenda, a convention agenda, a simplified chart of motions, club protocol, protocol for the speaker and other hints for the busy person who wishes to review, refer to or learn parliamentary law quickly.

A Seed in Time

A LITTLE seed and a lot of fertilizer will repair your lawn for summer. Remove old dead grass and stir up the soil in bare spots, seeding lightly. But don't make a whole new lawn until late August or September. Any trees which were not in good condition last season should be fed with high-nitrogen plant food. It's also time to plant sweet peas and other hardy annuals if the ground can be worked.

Dulled Driver

DON'T take "stay-awake" pills while driving at night, for you're endangering your life. You may be so stimulated that you will stay behind the wheel long after your brain has tired and your judgment and vision have been impaired. —A. G.

With distribution costs taking sixty cents out of every dollar spent on finished goods, many people ask:

What Price Distribution?

by David Kaplan

FOR MANY decades businessmen have been disturbed by the way distribution costs were absorbing an increasing share of a commodity's value. It doesn't seem right, somehow, that the cost of distributing an item should frequently exceed the cost of manufacturing it. Are distribution costs, in fact, too high?

For a long time the question went unanswered, primarily because of a lack of information and statistics. The picture finally began to clear about seventeen years ago when the Twentieth Century Fund published its celebrated study on distribution costs.

This study measured the costs of the distribution process from the first movement of raw materials right through to the finished product in the hands of the ultimate consumer. It found that in 1929 about 59 cents out of every consumer dollar spent for finished products went to defray the costs of those who performed distributive functions—marketing, advertising, consumer credit, transportation, etc.—and about 41 cents went to pay for actual production, which included agriculture, manufacturing and mining.

In 1955, Prof. Harold Barger's book, *Distribution's Place in the American Economy Since 1869*, was published. This study, not as wide in scope as that of the Twentieth Century Fund, only measured the costs of retail and wholesale trade. Transportation and the distribution costs of manufacturers were not included.

Dr. Barger reached three major conclusions: (1) that the labor force engaged in wholesale and retail trade between 1930 and 1950 increased from one worker in eight to one worker in six, while those engaged in commodity production declined from about half the total labor force to two workers in five; (2) that, between 1929 and 1949, productivity or output per man-hour increased by about one-fifth in wholesale and retail trade, while in production, mining and agriculture combined it increased about two-thirds; and

(3) that wholesale and retail costs remained fairly stable, at about 37 cents out of each dollar spent by the consumer for finished goods.

If what Dr. Barger found to be the trend for wholesale and retail trade since 1929 holds true for other branches of the distributive function studied by the Twentieth Century Fund—and, on the whole, there is every reason to expect that it does—we can conclude that distribution costs still account for approximately 60 per cent of the retail price of finished goods.

Everywhere the evidence piles up that productivity increases in distribution of goods have not kept pace with productivity increases in the making of goods. The Twentieth Century Fund study showed that between 1870 and 1930 output per man-hour in production increased ninefold, while manpower increased less than three times. In distribution, however, the increase in manpower was only slightly less than the increase in output handled, that is to say, almost a ninefold increase.

Dr. Barger found that between 1870 and 1950, productivity in retail and wholesale trade increased about twice as fast in production as in distribution. To this backwardness he attributes a large part of the growth in the proportion of the labor force now engaged in distribution.

Do these statistics mean that distribution is inefficient and not properly performing its function? Hardly. The early artisans (tailors, shoemakers, butchers, bakers, candlestickmakers) had no distribution costs to speak of. They frequently sought out and transported their own raw materials. Their workshops combined manufacturing, warehousing and selling facilities. The consumer would come to them, order and carry off their wares.

But, to become efficient, manufacturing had to be concentrated in areas where mass production methods—specialization, mechanization (and now automation)—could be applied. Accordingly, the making of the product was separated from the consumer both in time and place, and specialized services and facilities had to be supplied by a distributive system to bring product and consumer together.

Production thus passed on to distribution a great part of the expense of becoming more efficient. Of course, the efficiency of mass production would not have been possible without the creation of mass demand. Therefore, in addition to the actual physical transporting, storing, etc., the distributive function also had to em-

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brace the whole technique of modern selling, including advertising, sales promotion and public relations. Viewed in this light, high distribution costs reflect a phase of industrial progress and are symptomatic of a highly developed market economy.

IT HAS been said that our increased efficiency in making goods is almost wiped out by the increased cost of marketing those goods. This is absurd. If it were true, we would not have been able to raise our living standards. What is true is that we could raise living standards a lot faster if it were possible to boost productivity in the distribution services at the rate that output per man-hour has been increasing in production. Because of the nature of the distribution function, this is likely to remain an unrealized goal. Many of the devices used to increase output in production have only limited application to distribution. Production can be concentrated where it can be performed most efficiently and is, therefore, more susceptible to mass techniques. Distribution, on the other hand, must break down the products of mass production into small packages and take them to widely scattered buyers at not much more rapid a pace than the buyers can use them.

In addition, the distribution system constantly performs many new and costly services for producer and consumer. Though the much-discussed spread between farm and retail prices for food includes processing costs as well as costs of distribution, it offers a good example of the growth of these services. Between 1940 and 1955 consumers increased expenditures for domestic farm-raised food products from 14.5 billion dollars to 51 billions. The bill for processing, transporting and marketing this farm output was 9 billions in 1940 and 32 billions in 1955, an increase of 23 billions. It is estimated that six billion dollars of this increment are attributable to new food services, including the "built-in maid" services such as those provided in frozen and precooked foods. The consumer benefits in increased nutrition, tastiness, year-round availability of seasonal foods and in the many time-saving features of modern grocery products. The farmer also benefits because these services and the advertising that promotes them create a much larger market for farm products.

Now, costs of distribution *can* be cut by transferring certain functions from a special outside agency back to production, as has been done, for example, by some manufacturers who have incorporated their packaging opera-

tions into their regular manufacturing processes. Other functions have been transferred forward to consumers who are willing to dispense with services like credit, delivery, selection and alterations in order to get price advantages. This is demonstrated by the growth of the supermarket, self-service-cash-and-carry stores and discount houses.

To determine what the consumer really gains by this depends on the system of accounting you use. If you compare only store prices, he makes a gain. But this may not, by any means, be a net gain. If he has to resort to more costly alternatives for store services, such as substituting his own or another's compensable labor, he may even suffer a loss. Nevertheless, the readiness with which consumers have accepted these newer, less-service outlets has made possible the development of highly efficient methods of operation by many supermarkets and other self-service stores.

Undoubtedly, our distribution system, in many areas, is burdened by much duplication of facilities and overlapping of effort that piles up expense: more stores than are needed doing too little business to make them efficient; more gasoline stations than are needed to satisfy demand in many areas; too many trucks delivering small orders only to be followed into the same stores by other delivery trucks with other small amounts of a different brand of the same type of merchandise. This is sometimes referred to as the "waste of competition."

Obviously, savings could be made if such waste were eliminated and the number of outlets and services tailor-made to fit our exact needs. But what price would we pay in the process? Theoretically, great savings in distribution costs can be effected not only by eliminating duplicate facilities and services, but also by limiting the choice of the consumer by telling him what and how much to buy and determining for him the place and the time at which he is to buy it. Obviously, regimentation of the consumer is not our road to efficiency. Besides, no regimented system in practice has yet been able to match in efficiency our own admittedly imperfect methods.

Thus, if we evaluate our distribution system simply from the standpoint of cost, we fail to measure its real value: making available to the consumer a multiplicity of choices. No evaluation of our distribution system can have social validity without considering the range of choices made available to the consumer. Unfortunately, there is no productivity measure which reflects the real

value of this facet of distribution. Like many of the higher values of human life in a democracy, this must remain largely intangible. The attainment of nominally greater productivity through substantially limiting choices would give a very poor and false measure of efficiency from any social viewpoint.

Even though we cannot expect to parallel in the distribution services the productivity increases experienced in production, opportunities do exist for the elimination of much duplication without narrowing freedom of choice or reducing competition. First, the share of the market of the small, inefficient retailer and the marginal wholesaler has fallen rapidly, so that the distributive function has been moving at a faster pace into the hands of large managements that have the will and capacity to pour greater amounts of capital into modernizing facilities.

The pressure to boost efficiency has also increased in other ways. Until recently, the lower rate of progress in raising productivity in the distributive industries was reflected in employee standards. Wages were lower and, in particular, hours were longer for distribution employees than for factory workers. Unionization, wage-hour laws and laws requiring collective bargaining have changed this, especially through the achievement of the eight-hour day, five-day week. On the other hand, the mama-papa grocery, bake shop or confectionery store is still a dawn-to-late-night occupation in many localities.

This advancement in the status of distribution employees will have far-reaching repercussions. Better working conditions will force greater productivity, if for no other reason than that the more inefficient outlets will not be able to compete and will be forced to modernize or become extinct. Thus, the pressure of high labor costs will be a major factor in compelling management in distributive industries to discover, invent and adopt more efficient ways of performing their functions. ■

Crew-Cut Toupees

FOUR OUT OF FIVE men over 20 are bald or balding, says one of the country's biggest manufacturers of toupees. In fact, the company says, half its clients are in their twenties; 76 per cent are under 40 years of age. Proof of the trend that younger men are wearing hair pieces: 3 out of 4 sold are what the firm calls the "Ivy League crew-cut" type.

New jobs in the service industries and professions are opening up at a faster rate than in manufacturing and farming

The Changing Shape of Occupations

by Robert Lekachman

NOT ALL economic changes are swift and dramatic. Really important alterations in the way men live and work almost invariably occur quietly and slowly, in response to a vast complex of social, economic and political forces. This is certainly true concerning changes in the character of our occupational structure during the last eighty years—a period in which Americans, moving from rural areas to the cities, ceased to be predominantly farmers and became primarily involved in industrial production. Today additional occupational changes are taking place continuously as the rising output per man-hour in industry creates new demands for labor in distribution and service jobs.

The easiest way to understand the magnitude and significance of these shifts is to compare the types of work Americans performed in 1870 with the types of work they are currently engaged in.

In 1870, as the table on page 48 indicates, more than 50 per cent of American workers labored on farms or worked in the extractive industries. By 1950, 13.5 per cent of our labor force sufficed, not only to work the mines and feed more than 160 million Americans,

but also to feed additional millions of foreigners. Still, we had surpluses.

It is clear from this example that our tremendous technological advance has made possible a growing flood of manufactured goods and foodstuffs at rapidly declining per-unit applications of labor. This increase in productivity has led to other significant occupational changes during the eighty-year period from 1870 to 1950. As the table demonstrates, proportionately more of us are selling goods and services to each other, offering a greater variety of government services and, perhaps most interesting of all, providing many more personal services for each other. Note, for example, the nearly fourfold proportionate increase in the professions during the past eight decades, a rise which reflects a greater specialization of occupation and a higher standard of living.

The slight increase, proportionately, in personal and domestic service jobs actually conceals the sharp drop in the employment of servants. There has been a corresponding increase in the proportion of those employed in restaurants, bakeries, beauty salons, laundries and in other service organizations.

The movement from primary production to factory conversion to the office and the retail shop is not likely to stop. The promise of automation and atomic power is that relatively fewer industrial workers will be needed, while the improvement in agricultural techniques will continue unabated. By 1975, one farmer may well feed himself and 19 others, and one worker in eight will suffice to produce the consumer durable

CHANGING OCCUPATIONAL PATTERN IN THE UNITED STATES*

(Proportion of labor force employed in various segments of the economy)

Industry	1870	1900	1950
Agriculture and extractive	52.4	40.6	13.5
Construction	5.9	5.8	6.2
Manufacturing	17.6	22.1	25.8
Transportation, communication and public utilities	4.8	7.1	8.6
Trade and finance	6.4	9.7	21.2
Government	2.0	2.8	7.9
Professional service	1.6	2.5	6.3
Personal and domestic service	9.3	9.4	10.6

*Source: Dewhurst & Associates; *America's Needs and Resources;* New York; 1955; Twentieth Century Fund.

goods which symbolize our industrial achievement.

What are some of the economic effects of these changes?

A principal consequence has been a tremendous improvement in our standard of living. We eat better and more varied food than our fathers ate. Americans now face obesity as a national problem. Our clothing is better and, as foreigners have observed, Americans dress so much alike that economic position frequently cannot be inferred from our appearance. It is not long before the Paris original appears in thousands of accurate copies in department stores at a price well within the reach of most women.

Although there are wide differences in income and many Americans still experience some poverty, these income differentials are narrowing and the material benefits of our economy are being granted to ever-increasing percentages of American families. The fact that prosperity is a mass phenomenon here may explain the absence of class feeling and the moderate nature of our political differences.

A third major effect is the increasing margin of choice that we enjoy. To be very poor is to have little or no choice. We need only read Adam Smith and his followers to realize what this meant 150 to 200 years ago. When the classical economists spoke of the diet of the English working class, they spoke almost entirely in terms of bread. In contrast, most of the goods Americans now buy are not required to satisfy sheer physical necessity. Little of our food is bought for nourishment alone; flavor and variety play a big role. Few of the clothes we buy are designed only to protect us against the climate; we choose also on the basis of fabric and fashion.

Choice adds dignity and interest to life, and while some of our choices may be fictitious—the product of the advertising agency rather than of the engineer—a considerable number of real alternatives do exist.

Another important consequence of these changes is the relatively declining prestige and income of the white-collar worker and the corresponding rise in the status of the industrial employee, whose skills are sufficiently scarce to be extremely important.

While the changing nature of the ways in which we earn our living has produced many results favorable to our standards of life and to our satisfactions as individuals, new problems have accompanied these gains.

For example, there is the growing impersonality of much of the work we do. When most people

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were farmers or artisans they could see the fruits of their labor in finished products which were sold to known customers. Today, most of us are engaged in jobs whose function in the over-all economy we do not truly understand. Consequently, it is often difficult for us to see the practical use of what we are doing. This routinization of the work process is not peculiar to the factory.

Increasingly, office work is also being rationalized, broken down into small operations with the aid of complex machines.

In view of all this, some psychologists are inclined to look upon the continued curtailment of the work week as highly desirable, since it forces the worker to find further satisfaction in the leisure-time activities that his income makes possible. More important, however, is the fact that many managements have shown an awareness of the problems of job specialization in the factory and have endeavored to improve the quality of the work experience through industrial sociology.

There is another danger inherent in the prosperous conditions which have been brought about by our technological advancement and shifting occupational structure. This danger lies in the discretionary power of consumers in regard to spending. Because our margin of choice is so wide, we may be more susceptible to sudden decreases in spending than in the past. If, for some reason, consumers choose *not* to spend and save an unexpectedly large amount, business sales may fall markedly, followed by a decline in employment. Thus, any sudden drop in spending could lead to cyclical instability.

A word of summary now. As fewer and fewer people produce goods, increasing numbers of workers are able to produce services. This trend testifies to our increasing comand of technology; this makes our higher standard of living possible. We have been able to prolong our lives by better medical services, to send more of our children to college, to enrich our leisure and to enlarge our opportunities to choose.

I anticipate that such progress will continue and that by 1975 we shall be working fewer hours, earning more money and living longer. True, we face such major drawbacks as declining work satisfactions and, possibly greater susceptibility of the economy to business cycles. But these dangers are widely recognized, and attempts to remedy them are being made. In the final analysis, therefore, it seems fairly evident that the benefits of material advancement, of which the changing occupational structure is but a symptom, outweigh the costs. ■

The Utopians

With the Industrial Revolution making a shambles of the old order, Utopian economists sought refuge in plans to create a perfect world

THE EARLY nineteenth century could pass as one of the most paradoxical in the economic history of the western world. While new machines made possible the production of wealth on a hitherto unheard-of scale, the transition from farming and handicrafts to factory production brought in its train the miseries of uneven economic development. Agricultural productivity did not keep pace with the growing population of the cities, causing food prices and other costs to soar. The surplus labor on the soil became surplus labor in the factory centers, and the early stages of mechanization caused drastic reductions in the demand for workers at the most established centers of industry. Unemployment and the specter of starvation were the most common problems of common men.

Such conditions led a group of writers—usually and somewhat incorrectly lumped together under the heading of "Utopian socialists"—to challenge the existing social and economic system and to propose alternative systems for the production and distribution of wealth which, they believed, would do away with the misery of the working classes. As we shall see, the Utopians did not contribute anything new to economic analysis, and their specific proposals were impracticable and often ridiculous. What is important about them is that they fo-

cused attention on serious social and economic problems; and they faced these problems more hopefully than the professional economists of the time. Poverty, these men said, is not—as Malthus and Ricardo had contended—a necessary part of industrial growth.

The social philosophy of the Utopians was permeated with the ideals of the French Revolution —Liberty, Equality, Fraternity— ideals which they sought to translate into an egalitarian economic society. Unlike the Classical economists, the Utopians believed in the infinite perfectibility of human nature; and they therefore thought that by changing Man's environment, they could also change Man. In this, they were merely following a long line of thinkers from Plato to Thomas More to contemporary personalities who, dissatisfied with the society in which they lived, dreamed of a perfect world in which all men could live contentedly.

WHILE not strictly speaking a Utopian socialist, Jean Charles Simonde de Sismondi (1773-1842) was one of the most powerful critics of the prevailing economic system. The son of an aristocratic Italian family that had settled in Geneva, Sismondi began as a loyal follower of Adam Smith; but he modified his views after a visit to England, where he had an opportunity to observe factory conditions. There is no "invisible hand," he contended, which harmonized the self-interest of men with the general welfare of society. Indeed, just the reverse is happening in industrial society. Large-scale industrial production, he argued, results in a growing centralization of capital in fewer and fewer hands. But at the same time, mass production requires mass markets. With an ever-increasing proportion of wealth flowing into the hands of "Big Business," the possibility for mass markets keeps shrinking. Far from creating its own market, as Say had contended, production destroys it.

Business crises, according to Sismondi, are the result of this growing inability of the market to consume the goods produced in an industrial society. Depressions *do* occur, he argued, and we may as well acknowledge that fact and set about finding a cure. But his remedy that we curtail production was hardly constructive —although it followed logically from his general analysis. For if it is true, as Sismondi claimed, that increased production concentrates capital holdings which in turn serves to shrink the available market, then production must

This is the twelfth article of a series in CHALLENGE dealing with the economic development of Man.

always remain constant, or a crisis will ensue. But, of course, this isn't what actually happens in the real world.

Production creates new markets, both through the income it provides the producers and through the new wants that it creates. To advocate a return to preindustrial forms of manufacture in order to curtail the production of new wealth, as did Sismondi, was, in the true sense of the word, "reactionary."

ANOTHER critic of the existing order was Comte Henri de Saint-Simon (1760-1825), a French aristocrat who squandered a considerable fortune in attempts to win public acceptance for his social theories. Unlike Sismondi, Saint-Simon welcomed industrialization and industrial capitalism as a dynamic and progressive force. But he urged planned production to get rid of the "parasitical" classes (whom he never clearly defined) and to eliminate bureaucratic waste. How this was to be accomplished, and by whom, was never definitely stated.

A more realizable program was offered by Associative Socialists like Robert Owen (1771-1856), who hoped to reorganize society by setting up small, self-contained socialist communities which would gradually influence the mainstream of national economic life. Owen was a successful businessman who rose from factory hand to factory owner and became very wealthy before he had reached his thirtieth birthday. In his "model factory" in New Lanark (which became a showplace for statesmen and economists) no one worked longer than ten hours a day, child labor was severely restricted and workers were comfortably housed at company expense. Even so, Owen was able to compete successfully, for a time, with his less idealistic business rivals.

On the basis of his personal experience, Owen was convinced than Man's environment determined his character and that by improving his material condition, such antisocial traits as greed and envy could be eradicated for all time. The eventual failure of the model communities he tried to set up both in England and America—of which New Harmony in Indiana is perhaps the best known—seemed to belie this idea, for Owen had not reckoned with the psychological strains of communal life. Human desire for self-assertion and expression gave rise to violent quarrels which finally broke up the experiment.

A MORE bizarre character was the Frenchman, Charles Fourier (1772-1837), who urged the establishment of common liv-

ing quarters and workshops (phalanxes) which would demonstrate to the world the superiority of communal living. Fourier, whose sanity has been questioned by historians, had some fantastic notions about the future such as that ships would be drawn by whales and carriages by lions. Nevertheless, his ideas exerted a considerable influence on French and American intellectuals. Several "phalansteries," such as Brook Farm in Massachusetts, which included such distinguished personages as Nathaniel Hawthorne, were tried, but they all failed for the same reason that Owen's experiments had failed: an inability of the members to get along with each other under conditions of complacency created by the rules and regulations of a paternalistic authority.

Pierre Joseph Proudhon, perhaps the most interesting of the Utopians, was an anarchist rather than a socialist. Unlike the others, he was resolutely opposed to the state in any form, capitalist or socialist. In fact, he opposed all types of association and organization. Private property he regarded as the product of theft. Employers robbed workers by not paying them the full value of their labor. In his society, everyone would receive the full product of his labor. This was the only natural form of property and would be universally respected, were it not for the state, which exists solely to protect those who steal from the community.

The socialist and radical criticism of capitalism in the early nineteenth century is important for several reasons. Sociologically, it created a stir by rediscovering the rather dormant ideas of economic equality and social welfare and thus paved the way for the criticism of Karl Marx. In economics, it drew attention to serious economic problems involved in the development of an industrial society. The specific analyses of the Utopians were always questionable and sometimes ridiculous, and the remedies suggested for the reorganization of society proved superficial and unworkable. But they also raised some challenging questions. Why do we have depressions? What are the reasons for unemployment? Is poverty really a necessary aspect of industrial growth? These and other questions were to lead to a reexamination of Classical economics, forcing it to come to grips with social problems that had thus far eluded it. ■

NEXT MONTH: Building upon Classical economics, Marx develops a critique of capitalist society that challenges Victorian economic practice

He's on an Expense Account

by Harvey S. Berman

The "swindle sheet" adds up to a whopping two billion dollars per year today, reflecting the wider use of a new kind of incentive

NOT LONG AGO a young executive who in his two years with a leading manufacturer of "electronic brains" had distinguished himself by his diligence and ability, was summoned to the office of his department head. As a reward for his service to the firm, he was given a promotion. But equally important, or at least so it seemed from the prestige viewpoint, he was given a tax-free expense account, which was his to use whenever he needed it for company affairs.

This is far from being an isolated case. More business people than ever before are hearing the two words "expense account" applied to them for the first time as the nation's total expense account bill soars past the 2-billion-dollar mark. Though the practice has long been present in American economic life, its widespread development has come only recently.

During and after World War II, high taxes on business profits induced companies to seek methods by which huge payments to the federal government—in some cases as much as eighty-two cents on the dollar—might be lessened. The personal expense account, which provided some measure of relief at tax time, was one of the ways businessmen elected to keep down their government levies. Since the Bureau of Internal Revenue long ago recognized the fact that travel and a certain amount of entertaining were necessary to the conduct of a business, it allowed such expenses to be deducted from taxable profits. Many firms which could show their high costs of doing business were able to reduce their profits to such an extent that they exempted themselves entirely from the 30 per cent excess profits levy. Other firms showed sufficient expenses

against income so that their excess profits taxes were considerably less than they otherwise would have been.

At the time of the excess profits levies an underlying thought behind the expense account appeared to be, "If we have to choose between turning a large part of our income over to the Internal Revenue people or using a portion of it to help grease the social wheels of business, let's spend freely—and deduct when taxes are due."

But even when on December 31, 1953 excess profits taxes were abolished, the expense account continued to grow. With a 52 per cent corporation income tax in effect, expense accounts may still contribute significantly to the deductions that can be made against taxable income.

Despite the fact that the government has become far more careful as to what it will allow as a "reasonable" item on a cost sheet, the deductions it permits are still fairly liberal. Therefore, while costs listed by executives and salesmen may be scrutinized more painstakingly by the tax people today than in the past, and although firms may be more reluctant to allow uncontrolled expenditures, the number of companies utilizing liberal expense accounts is still increasing.

One of the main reasons for this is that requests for pay hikes are continuing to mount. In an attempt to assuage these demands and, if posible, to offer other incentives which will make smaller salary increases more palatable, the expense account has been employed as a fringe benefit. Employees might feel it is a financial gain to be able to spend someone else's money, and certainly an expense account enhances one's prestige in the business world where over the years it has become a definite sign of rank.

EXPENSE accounts are generally of two types. In some firms, executives and salespeople are given a flat allowance which they are entitled to spend. For example, many salesmen on the road receive a check in advance to cover their expected costs. There is a tacit understanding that what is not actually spent on behalf of the company should be returned.

However, a host of doubtful practices has sprung up in the wake of the flat allowance, and instances where travelers on company business have netted a tidy sum on their trips are common. Salesmen and executives have learned to take quarters in shabby hotels and report that they have stopped at the best; and

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Harvey S. Berman wrote this article on assignment for CHALLENGE. It is the product of first-hand interviews and research.

meals with "important clients" that actually never took place are often charged to the firm.

Yet, for the scrupulous but hard-driving business representative on a flat allowance, the money he receives is often barely enough to cover his expenses. One executive on a tour of the Midwest for a textile mill reported recently, "I'm supposed to meet people, take them to swank places, wine them and dine them, and achieve miracles on the minimum given me. More often than not, it just can't be done no matter how hard I try."

A survey conducted by *Sales Management* magazine found that $28.33 per day was the average needed by executives visiting large cities. In smaller communities, *per diem* costs for executives averaged $20.76. Salesmen generally required $16.53 if they were to perform the many tasks expected of them. Yet, in many instances, company representatives were not furnished with anything near their needs.

In other instances, the flat allowance often encouraged employees to spend the full amount they received, regardless of whether they actually needed it. The inequities and loopholes of the flat allowance system have, therefore, induced companies to turn to the discretionary expense account. This method permits the traveler to spend what he requires, file vouchers with his home office and then receive payment. Oddly enough, in the majority of cases where this type of expense account has been instituted, padding has been kept down. Such firms as Sperry Rand and International Business Machines point out that for the most part costs are logical and never overly high. A Sperry Rand employee who is on tour nearly one-third of every year explained one of the reasons for the discretionary account's greater accuracy. "The psychological effect of the 'honor system' plays a very important role. Since we are led to believe that we are being trusted in the matter of our expenses, we try to be scrupulously honest."

WITH the end of excess profits levies and the subsequent decline in the appeal of the expense account as a tax-saving device, many firms—whether they use the flat allowance or the discretionary system—have taken a new view toward costs incurred by salesmen while on company business. Today, most managements feel that with rising business costs and increased competition, items mentioned on a traveler's expense list must pay for themselves. Furthermore, in deducting expense accounts as operating costs, busi-

ness has run head-on into a tightening of tax interpretations by the Bureau of Internal Revenue. Therefore, the salesman who continually shows expenditures far greater than the gross margins on his sales may expect either to have his expense privileges taken away, or to be discharged altogether.

No matter how liberal they are in the allowances granted their employees, most organizations now maintain systems whereby expenditures may be verified. Such systems range from the spot check to special accounting departments that are concerned with nothing else but the analysis of incoming expense statements.

Other companies have resorted to displaying monthly expense reports in a prominent place, with detailed listings of what each traveler has spent. The theory behind this system is that when compared with their peers, most employees would rather hold down their expenses than appear to be overcharging.

The most common check, however, is still the thorough combing of statements submitted at the end of a trip. Many firms employ accountants for just this purpose. They may check dozens of items on a single list when the party involved is suspected of padding. In the case of more dependable employees, the accountants may simply spotcheck a few items. In any event, some sort of analysis is made, and considerable pruning is often done.

Although companies are exercising greater care in what is spent and why, expense allowances have become an important and permanent aspect of today's commercial scene. Few businesses fail to provide expense accounts, especially for executive personnel.

The benefits of expense accounts, as far as the employee is concerned, depend upon his company and its policy regarding expenditures. In spite of the recent tendency for firms to tighten up, there is still enough glitter in the words "expense account" to make it highly desirable. For most Americans, receiving an allowance is a sought-after financial gain, an indication of greater responsibility, and perhaps most important of all, a boost in the status on the social ladder. ■

Answers to True-False Quiz

(1) True *(see page 42)*
(2) True *(see page 24)*
(3) False *(see page 10)*
(4) False *(see page 51)*
(5) False *(see page 6)*
(6) False *(see page 60)*
(7) True *(see page 47)*
(8) False *(see page 29)*
(9) True *(see page 55)*
(10) True *(see page 34)*
(11) True *(see page 20)*
(12) True *(see page 15)*

current trends and outlook

Economics in Action

prospective increases in government expenditures and in consumer spending power plus large backlogs of industrial orders are some of the factors expected to sustain our economic boom

BUSINESS PROSPECTS for 1956 appear somewhat brighter than the predictions of a few weeks ago. Although farm income continues to drop and sales of automobiles and new homes have been falling off considerably from 1955 highs, other major industries have been chalking up striking gains. Consequently, some experts seem more confident about the state of the economy, and it is generally assumed that gross national product (annual output of goods and services) will achieve a record $400-billion-a-year rate in the current quarter.

One reason why the automobile industry commands so much attention in economic discussions is its position as the country's largest buyer of materials (rubber, steel, chemicals, textiles, etc.) and one of the biggest employers. This explains the national concern over the fact that production for Chrysler, Ford, and General Motors—the industry's Big Three—fell 8 per cent in January from the previous month and 6.7 per cent from the year-earlier level and may decline still further, perhaps as much as 15 per cent.

However, cutbacks in orders by auto manufacturers, particularly for steel, are being offset by increased ordering from other industries such as road machinery, machine tools, and railroad equipment, which anticipate sales gains this year up to 50 per cent higher than in 1955.

As far as labor reductions go, part of the adjustment in the automobile industry has been achieved thus far by an elimination of overtime and a return to a normal work week. Further layoffs may possibly be offset by increased labor demand in the durable-goods industries, especially aircraft manufacturing, chemicals and electrical equipment.

Another bullish factor in the economy is the prospective boost in consumer spending power. As of March 1 the minimum wage has been raised from $0.75 to $1.00 an hour. The increase is expected to better wages of some 2 million workers by an average of $0.13 an hour and indirectly to raise the level of the general wage structure.

Government spending is also on the uptrend. On January 18, President Eisenhower submitted to Congress a $65.9 billion budget for the fiscal year 1957 (which begins July 1) providing for increased federal outlays for arms, schools, public health, housing, community development, etc.

Other plus signs are these: industrial order backlogs are high; capital outlays by business are expanding; and inventories in relation to sales can still grow without danger of retrenchment. Thus, it would seem that the President's report to Congress that "underlying conditions will remain favorable to economic growth" is well founded. ■

BUSINESS ON A VISA

by Frank A. Tinker

Our consulates provide valuable services, free, to Americans who want to do business in foreign countries

UNDER the impetus of the present economic boom, an astonishing number of American businessmen are venturing for the first time into foreign markets. It appears, however, that many of them—particulary the small-to-medium-sized entrepreneurs—are not yet aware of the useful business services available to them through U.S. government representatives abroad.

A Maryland manufacturer recently spent a considerable amount of money and time canvassing the principal marketing areas of middle-eastern Canada to locate reliable agents and to survey sales possibilities. After covering many weary miles, he wound up at a United States consulate. He spoke for an hour with the consular officer in charge of the commercial section and scanned the data available in the consulate's files. Somewhat ruefully he compared the cost of the information he had laboriously collected with what a mere postage stamp on a letter to the American consular offices could accomplish.

"Someone should have told me," was the way he summed up his expensive lesson. But chances are that at some time in his career he had been told of the trade assistance available to him through his government's consulates in foreign countries and had dismissed it as inapplicable to himself.

In this case, the consular officer could have done much more than merely furnish the desired information. One of his major services is the establishment of mutually advantageous connections between manufacturer and foreign business agent. Aside from maintaining directories of firms engaged in importing, exporting, distribution and other industries, the consul usually knows

enough about the local scene to name those few organizations which seem most suitable for the project at hand.

The service he renders in channeling inquiries and establishing prompt liaison is available without cost to any American, whether his business assets total one hundred dollars or one million. In either case, the consular economic officer is the American businessman's open door to a wide range of reputable associations and sources. This may include chambers of commerce in Morocco or a board of trade in Tokyo.

The consul's grasp of language, local market conditions and government policies becomes especially invaluable in the more remote parts of the world. An American exporter desiring an outlet in Hong Kong, for example, would find the service of the consul indispensable, if only because of his familiarity with the peculiar customs of oriental trade.

Reliable contacts are also essential in such places, but they are only a start. To the company official who is investigating new territory, the data obtainable from the consular officer regarding duties, taxes, monetary exchange, trade, customs, shipping and pilferage is vital. It may spell the difference between a comfortable profit and a disastrous loss.

When touchy situations arise in foreign countries, the consul is often the only person an American businessman can turn to. Some time ago in Venezuela a government order was put into effect to halt the bootlegging of American cigarettes. The word "Venezuela" had to appear not only on each carton and each package, but on *each cigarette* as well. The American firms affected were in a dither. The consul had to do some fast talking, first to find out if any modification of the regulation was possible; and second to explain to the American firms what had to be done to meet the regulation's minimum requirements.

Of course, the consul does not have an entirely free hand, and there are many things he cannot do. He may not answer private inquiries concerning political matters, nor may he express his opinion, however strong it may be, on controversial issues.

Further, the consular officer cannot vouch personally for the financial standing of foreign firms. He can give out information which comes to him publicly, or he can furnish the financial references which foreign firms themselves have offered; but beyond that he must, by regulation, disclaim responsibility.

Nor may the consul spy on other

Frank A. Tinker writes from vast personal experience as a former U. S. Foreign Service Officer.

American firms engaged in business within his district for the benefit of a competitor. He is there to report on foreign developments, not to assist a particular faction on his home front.

In general, then, an American businessman must realize that his consular officer is a public, not a private, agent. Even in trade complaints, the consul is severely limited in the actions he can take to set matters right, although within these limits his services can be very effective.

In most complaints, the real trouble is a deterioration of relations between the parties involved, and the consul's job becomes that of mediator. Take the example of the American exporter who had shipped some goods abroad. The foreign importer, finding some of the products unsatisfactory, stopped payment on his draft to the American bank. While the conflict continued, the storage bill mounted, and neither party would pay it. Finally, the importer washed his hands of the matter.

The consular officer would have been entirely out of order if he had called at the importer's office (as he is sometimes asked to do) and demanded acceptance of the merchandise. Nor could he have prosecuted the importer in the local courts. What he could do was to persuade the two parties to resume negotiations and start the goods moving once more, thus restoring a mutually profitable business relationship.

Where the friction involves a foreign government agency and an American, the consul's action may be more direct. In one case, a large shipment of canned goods was held in bond in Canada because the labels did not fulfill the requirements of that country's food and drug act. The consular officer arranged to have that particular consignment of goods released for distribution, with the understanding that additional shipments would be delayed until proper labels were affixed.

To carry out successfully his diverse assignment of supplying all kinds of commercial information, besides promoting and protecting American business interests, the consular officer is required to spend much of his so-called free time in meeting people and building good will. Consequently, when he is called upon by an American citizen in business distress, he can secure relief that is seldom obtainable through formal avenues of approach. At such times, by means of the excellent reputation which he has assiduously cultivated, a seemingly simple representation on his part can repay, many times over, all the taxes the businessman has paid or will pay to support his government's foreign service. ■

Challenge Quiz

HOW WELL can you do with this true-false quiz? Test your ability to increase your knowledge through reading. Ten correct answers is Excellent; 9, Good; 8, Average. If you do the quiz *before* reading the articles, 6 correct answers is Good. Answers on page 58.

(1) Distribution costs account for approximately 60 per cent of the retail price of finished goods.

True ☐ **False** ☐

(2) Two percent of current national income is used to pay interest on the national debt.

True ☐ **False** ☐

(3) The sons of big business executives will provide the bulk of the big business leadership of 1975.

True ☐ **False** ☐

(4) The Utopian socialists, attacking the excesses of the Industrial Revolution, called for a return to a simple, farm economy.

True ☐ **False** ☐

(5) The price-cutting practice of discount houses constitutes unfair competition.

True ☐ **False** ☐

(6) A consulate serves primarily as diplomatic liaison for the home government.

True ☐ **False** ☐

(7) Farmers and miners constitute less than 15% of the working population.

True ☐ **False** ☐

(8) There is a scientific law of population from which a rate of growth can be accurately projected.

True ☐ **False** ☐

(9) Excess profits taxes stimulated the widespread use of the expense account.

True ☐ **False** ☐

(10) Even if sufficient funds were available, colleges and universities could not meet their plant and faculty needs of the next 20 years.

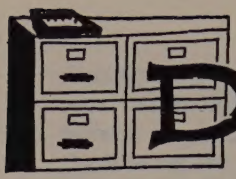
True ☐ **False** ☐

(11) The function of Operations Research is to supply data and recommendations to facilitate executive decisions.

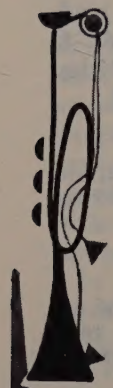
True ☐ **False** ☐

(12) Women make up 40 per cent of the labor force.

True ☐ **False** ☐



Dept. of Better Mousetraps



Personal Business: A new after shave lotion called "Outdoors" which gives the face a tanned appearance . . . guaranteed to get you a seat on the subway, a link bracelet with a tinkling music box charm . . . a foam rubber Sit-N-Snooze pillow which fastens around your neck, made expressly for cat-naps . . . a pocket-size, 2-pound oxygen unit equipped with 45 liters of oxygen, a mask and regulator . . . and a 3-pronged gadget designed to grab that last elusive olive in the bottom of the bottle.

* * *

Around the House: *a batteryless flashlight that works on a special compound and requires no bulb replacement . . . an optical device installed in the door which has a wide-angle lens so you can observe a caller without being seen . . . a spray-on product claimed to remove rust stains from fabrics, porcelain, aluminum, tile or car chrome . . . and an electric push-button window for the home that can be operated by a control button near the window or through a central switch.*

* * *

Gadgets for the Car: a sodium alloy slug, which is claimed to enable a car to travel 20,000 miles without an oil change . . . a 2-foot long brush to whisk snow off the windshield, and on the other side, a plastic ice-scraper and treated felt pad to rub the insides of windows to prevent fogging . . . a 100-volt electric unit to outfit your garage with electrically operating doors . . . an aluminum arm rest to give the driver armchair comfort or a passenger a shelf for reading, knitting or feeding the baby . . . and power take-off drums which can be bolted on rear wheels quickly to wrench the car out of snow, sand or mud.

* * *

From the World of Industry: *a plywood combination houseboat and trailer . . . a check-writing device which produces checks and statements by means of punched cards, at a speed of 300 per hour . . . a "paper welder" that fastens paper without staples . . . and a sound system attached to a warm-air furnace or central air-conditioning unit, which, when wired to a TV set, radio or phonograph sends sounds through the house via the air ducts.*

* * *

The Animal World: a colorful wooden bird call—turn the screw to make it chirp and you'll have the birds talking back . . . and to housebreak your pup, a compound, which, when poured on a newspaper or mat attracts Fido irresistibly. ■